# (TS//SI//REL)VPN SigDev Basics

S31244 - OTTERCREEK

Derived From: NSA/CSSM 1-52 Dated: 20070108

Declassify On: 20341101

## Overall Classification:

## TOP SECRET//COMINT//REL TO USA, FVEY

## (U) What is a VPN?

- (U) A Virtual Private Network or VPN is a computer network that uses encryption to securely connect remote users/networks over an otherwise insecure network, usually the public internet.
- · (U) Common Types:
  - PPTP, IPSec, SSL
- · (U) Public Key Encryption
  - Diffie-Hellman, RSA

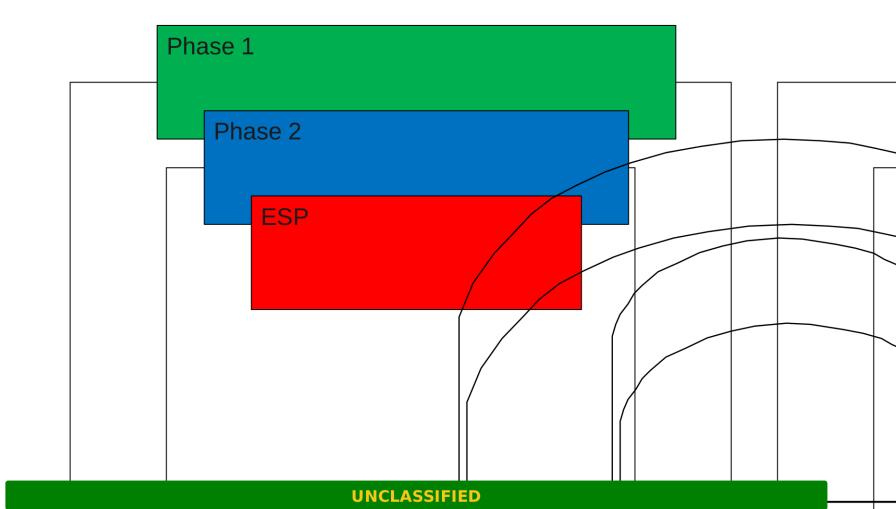
## (U) PPTP

- (U) Microsoft Point-to-Point Tunneling Protocol
- · (U) Control Channel
  - TCP port 1723
- · (U) Data Channel
  - GRE-Next Protocol 47
- · (U) RFC 2637, RFC 3078

## (U) IPSec

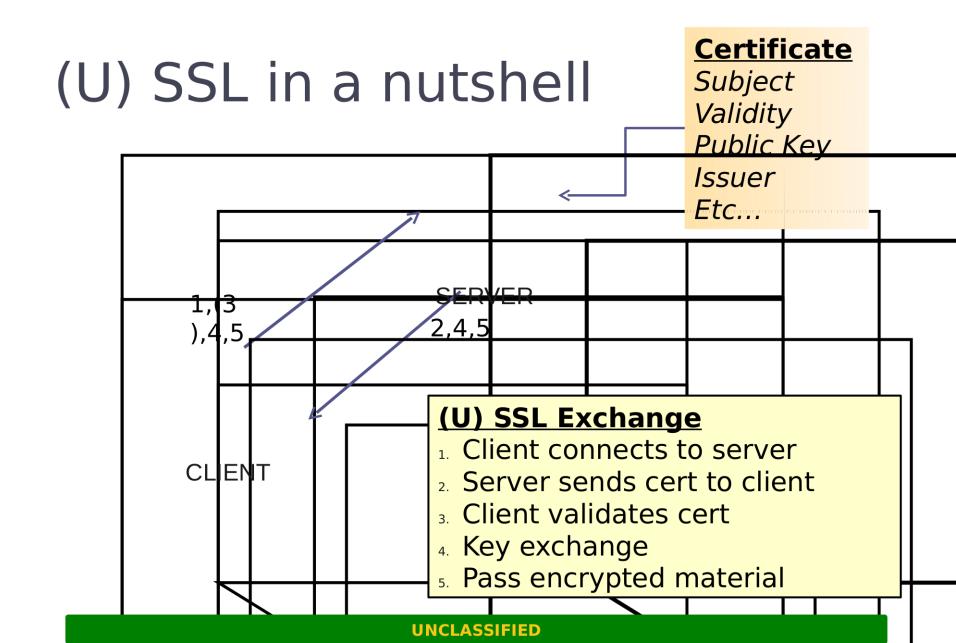
- · (U) Authentication
  - Pre-shared key (PSK) or Public key certificates
- (U) ISAKMP/IKE packets are used for key exchange and to establish the secure connection
  - UDP port 500, 4500; TCP port 500
- (U) ESP packets contain the encrypted data
  - IP Next Protocol 50; UDP port 500
- · (U) RFC2402, RFC2406, RFC2409, RFC4306, RFC2408

# (U) IPSec in a nutshell



## (U) SSL/TLS

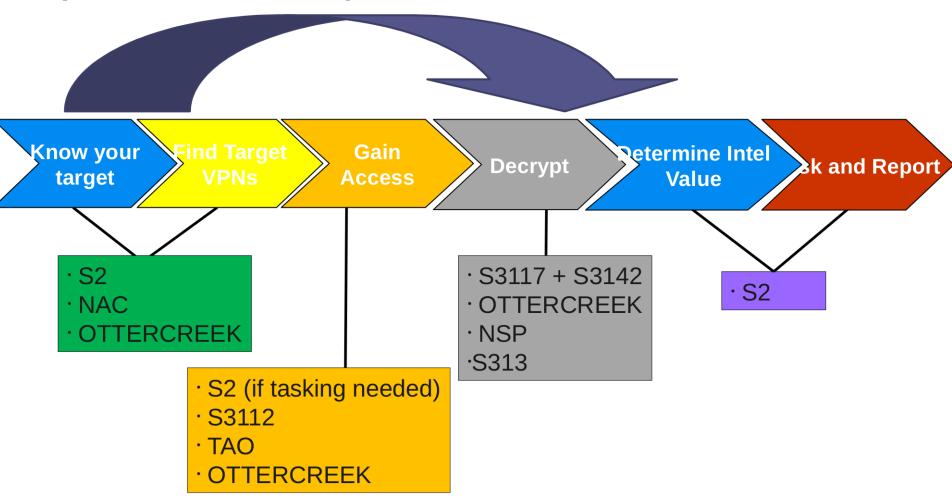
- (U) Secure Sockets Layer/Transport Layer Security
- (U) WARNING! e-commerce = tons of uninteresting SSL traffic
- · (U) Common ports: TCP ports 443, 995
- · (U) RFC2246, RFC4346, RFC5246



# (TS//SI/REL) Who works VPNs?

- (TS//SI//REL) VPN Working Group (go vpn)
  - S2, SSG, CES (OTTERCREEK, NSP, S31322, S3117, S3112), TAO, etc.
- (TS//SI//REL) Alias:
  - (Board alias:
- (TS//SI//REL) Meets every other Thursday at 1300

# (TS//SI/REL) Who works VPNs?



# (TS//SI//REL) So you think your target is using a VPN...

# (TS//SI//REL) SigDev Tools

## (TS//REL) VPN Specific

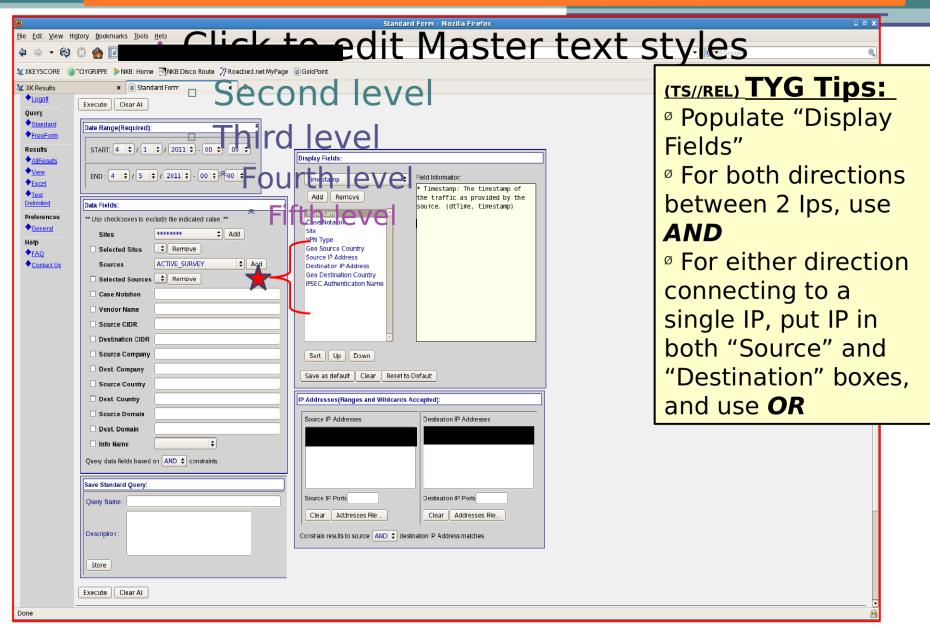
- BLEAKINQUIRY
- DISCOROUTE
- TOYGRIPPE

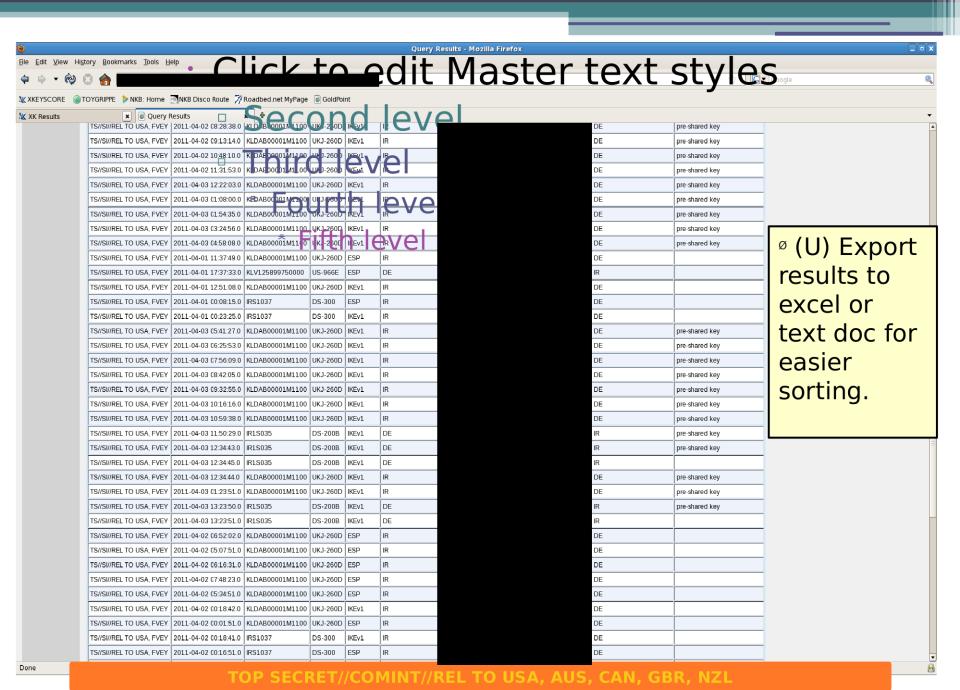
## (TS//REL) Also useful

- MARINA
- MASTERSHAKE
- NKB
- PINWALE
- RENOIR
- TREASUREMAP
- TUNINGFORK
- XKEYSCORE

## (TS//SI//REL) TOYGRIPPE

- (TS//SI//REL) Database of VPN metadata
  - IPSec, PPTP, ViPNet





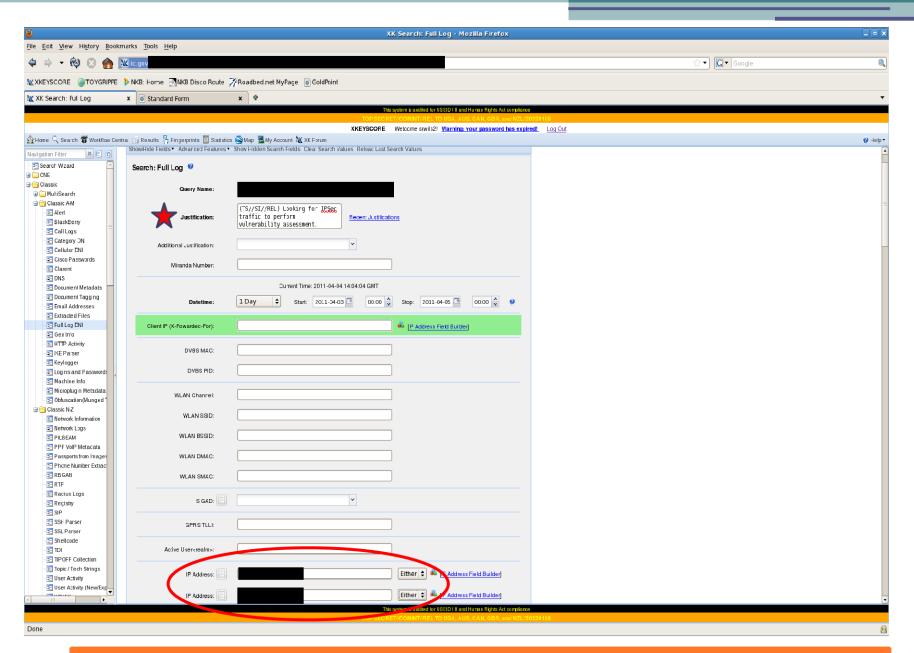
## (TS//SI//REL) XKEYSCORE

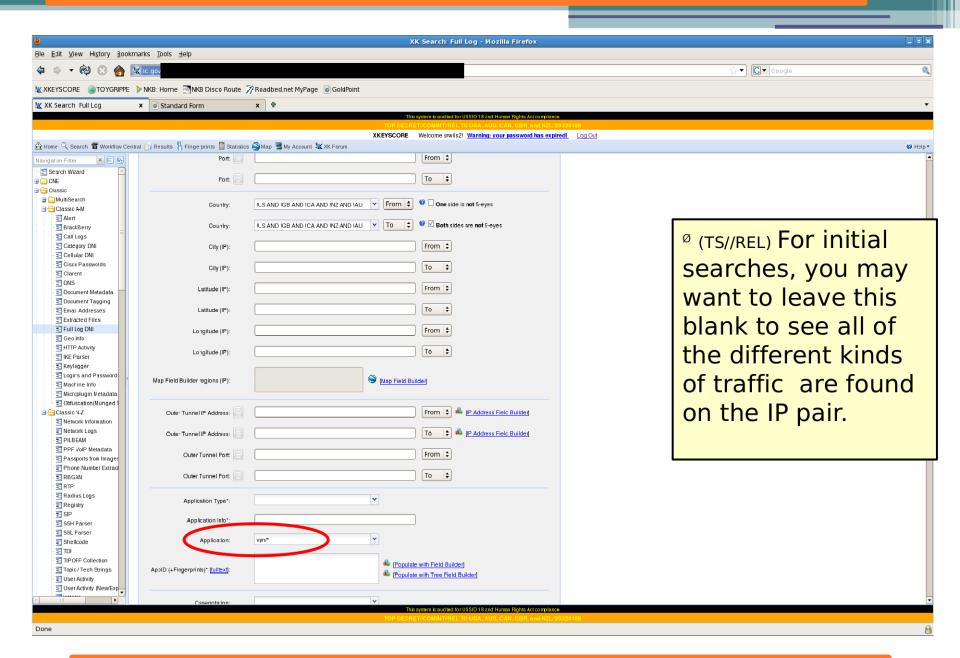
## (TS//REL) Fingerprints

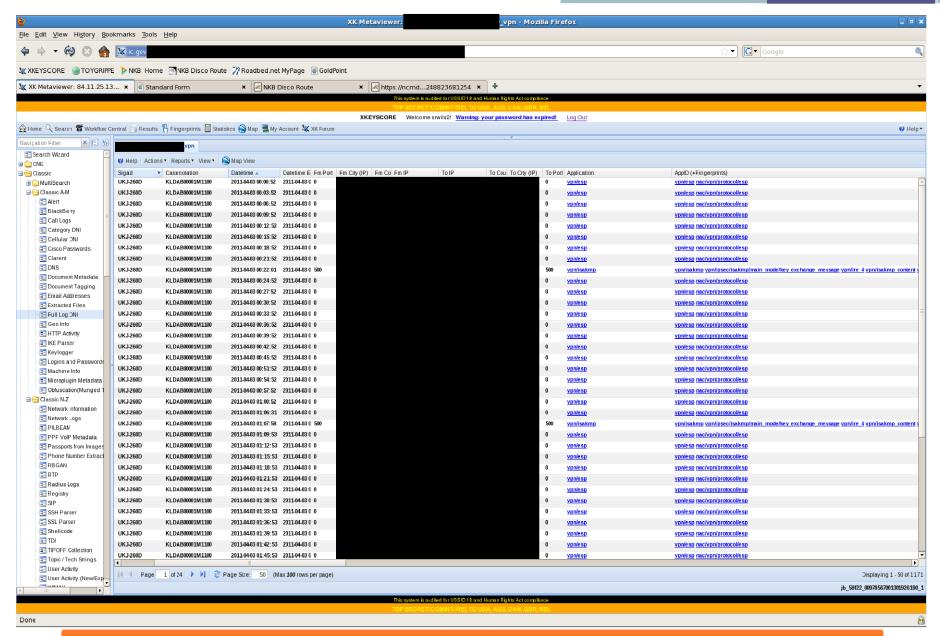
- IPSec
  - vpn/esp
  - vpn/isakmp
- PPTP
  - vpn/pptp\*
- · SSL
  - network encyption/ssl

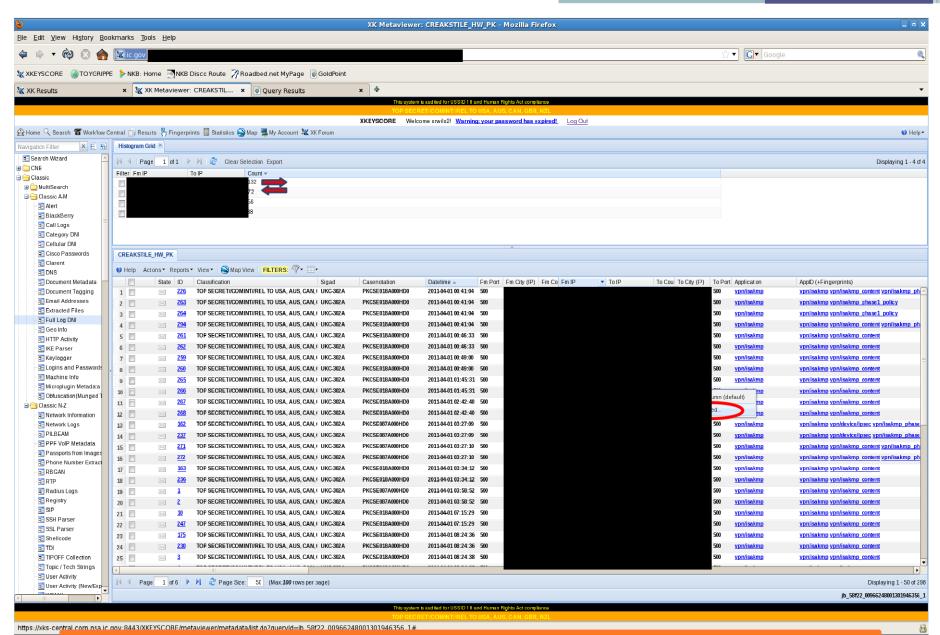
## (TS//REL) Search Forms

- Start with FULL DNI
  - vpn/\*
  - network\_encrytion/\*
- · IPSec
  - IKE Parser
- · SSL
  - SSL Parser









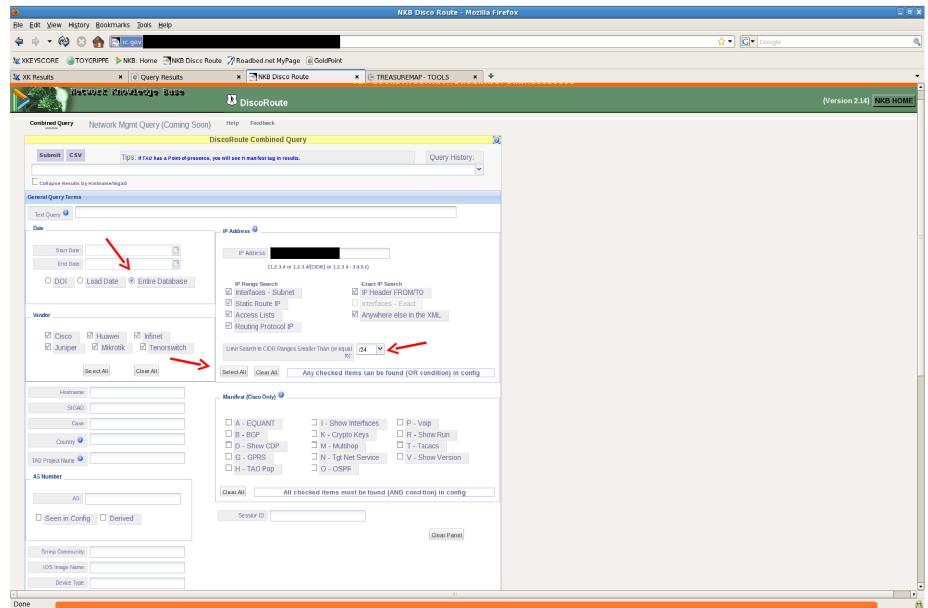
## (TS//SI//REL) PINWALE

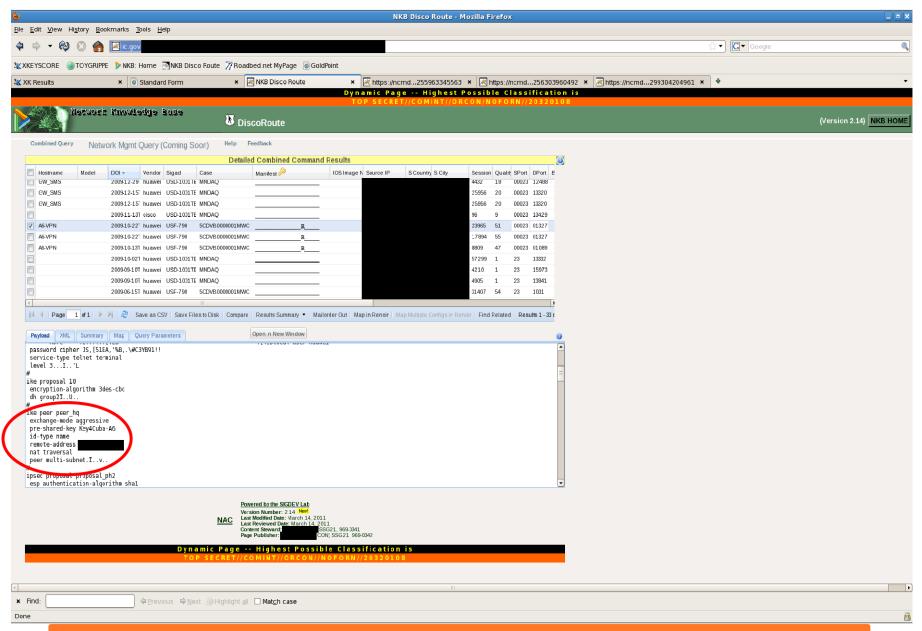
(TS//SI/REL) Both VPN traffic and Sys Admins passing information about VPN setup

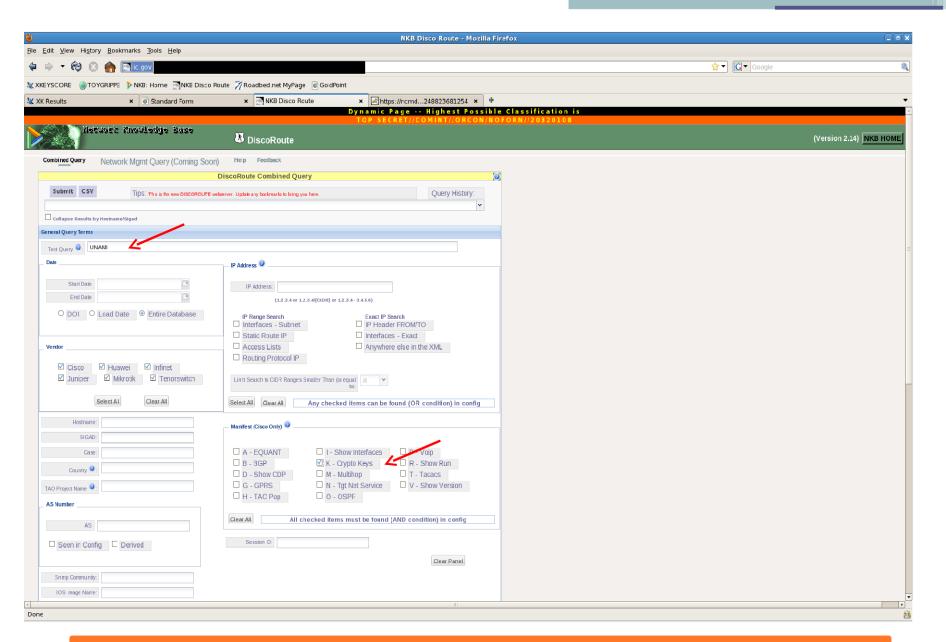
- (TS//SI/REL) IP addresses and port numbers (ex. AP 00500) \*\*\***Document Zone** = **C2C**
- (TS//SI/REL) Display 'DZ Protocol SRC Port', 'DZ Protocol DEST Port', 'Next Protocol Name'

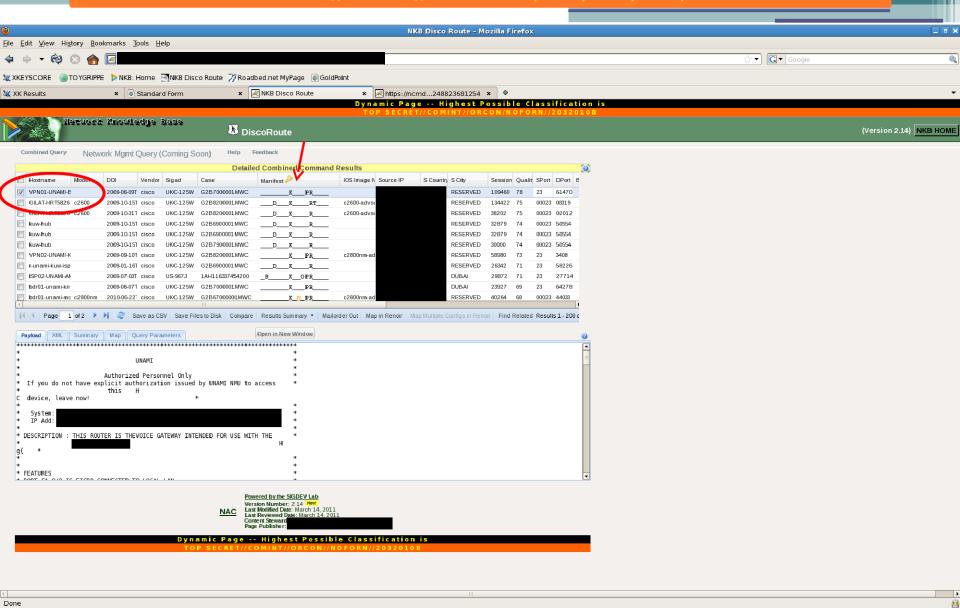
## (TS//SI//REL) DISCOROUTE

- (TS//SI/REL) Router configuration data
  - From passive and active collection
  - Key terms to search for within configs:
  - 'crypto map', 'isakmp', 'ipsec', 'pre-shared-key'









# (U) Others

- · (TS//REL) NKB
- · (TS//REL) TUNINGFORK
- · (TS//REL) TREASUREMAP
- · (TS//REL) RENOIR
- · (TS//REL) MASTERSHAKE
- · (TS//REL) ROADBED
- · (TS//REL) BLEAKINQUIRY

# (TS//SI//REL) Basic VPN rules of

(TS//REL) If you have an IP address...

- Check TOYGRIPPE and XKS
  - Look for paired traffic
- For IPSec, check sys admin chatter for PSK (DISCOROUTE; PINWALE; MARINA)
- Share your data with OTTERCREEK for vulnerability assessment (XKEYSCORE or DROPBOX)
- Submit tasking

· Look in DISCOROUTE

thum, If you don't ...

- Query Sys Admins in PINWALE and MARINA
- Check your targets TAO projects

EITHER WAY,
JOIN THE
VPN WORKING GROUP

FOR ALL OF YOUR VPN SIGDEV NEEDS

## (U//FOUO) Useful Links

- · (TS//SI//REL) **VPN Working Group (go vpn)**
- (TS//SI//REL) OTTERCREEK (go VPN XFT)
  - VPNXFT DROPBOX

(TS//SI//REL) Network Security Products (go NSP)

# (U) Questions?



**OTTERCREEK**